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wallmank@wallman.com
555 12th Street NW
Suite 321
Washington, DC 20004


WALLMAN STRATEGIC CONSULTING, LLC
Phone: 202.347.4964
Fax: 202.347.4961

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JAN 21 1999

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Kathleen M.H. Wallman

January 21, 1999

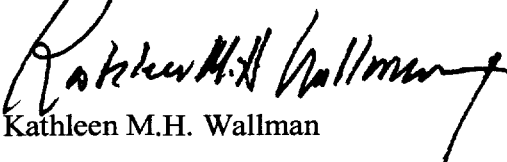
Magalie Roman Salas
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, D.C. 20554

Re: *Ex Parte* Presentation
CC Docket No. 98-146
Notice of Inquiry- Advanced
Telecommunications Capability

Dear Ms. Salas:

Enclosed are two copies of an ex parte presentation relating to the above matter that I have submitted to the Chairman, Commissioners and Commission staff.

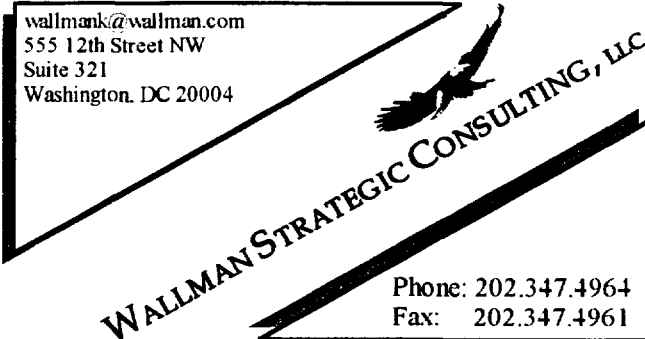
Sincerely,


Kathleen M.H. Wallman

Enclosures

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Kathleen M.H. Wallman

January 21, 1999

The Honorable William E. Kennard
Chairman
Federal Communications Commission
Washington, D.C. 20554

The Honorable Harold Furchtgott-Roth
Commissioner
Federal Communications Commission
Washington, D.C. 20554

The Honorable Susan Ness
Commissioner
Federal Communications Commission
Washington, D.C. 20554

The Honorable Michael Powell
Commissioner
Federal Communications Commission
Washington, D.C. 20554

The Honorable Gloria Tristani
Commissioner
Federal Communications Commission
Washington, D.C. 20554

Re: Notice of Inquiry- Section 706
Advanced Telecommunications Capability
CC Docket No. 98-146

Dear Chairman Kennard and Commissioners:

Thank you for taking the time this week to meet with Dr. John Loose, President of Corning, Inc., Timothy J. Regan, Vice President, Corning, Inc., and myself, to discuss the issues involved in the Section 706 Notice of Inquiry. You were very gracious with your time and we appreciate it greatly.

Two important issues were raised in the meetings. I thought it would be best for me to respond to those issues in writing to provide greater clarity.

Definition of Advanced Telecommunications Capability

We discussed at some length the bit rate that is required to meet the definition of advanced telecommunications capability in the statute. Our view is that the law requires a rather robust capability because of the inclusion of certain terms on the definition. These include: the term “broadband” and the phrase “...enables users to originate and receive high-quality voice, data, graphics and video...” We believe that the Congress included this term and phrase in the statute in order to give the Commission as clear direction as possible, without specifying a bit rate, that the capability was to be substantial.

First, we believe the term “broadband” must to be defined in terms of megabits, not in terms of kilobits. Specifically, we believe that the literature shows that a minimal rate of 1.544Mbps is necessary to constitute broadband transmission. Numerous technical sources, including, ¹the International Telecommunication Union, the ²Information Age Dictionary, ³The Telecommunications Fact Book, ⁴Gemini Consulting, ⁵MCI World Com, ⁶as well as various technical articles, have adopted a 1.544 Mbps definition for broadband.

There are sources that define broadband in terms in of a lower bit rate, perhaps even in terms kilobits. But clearly a reasonableness test must be applied here. And any reasonable technical expert will attest to the fact that transmitting broadband signals (that is video signals) requires at least 1.544 Mbps of capacity.

The second constraint in the definition is the language which states that the capability must. “... enable users to originate and receive high-quality, voice, data, graphics, and video...” The transmission of video in both directions (downstream and upstream) in this part of the definition. Any capability that cannot transmit video bi-directionally would not, by definition, qualify as advanced telecommunications capability.

Video transmission requires megabits of capacity, not kilobits. Below is a chart which indicates the bit rates necessary to transmit various forms of video. As you can see, at least one megabit is necessary to transmit TV quality video frames.

¹ ITU Recommendation 1.211, p.8 , International Telecommunication Union, B-ISDN Service

² The Information Age Dictionary, Jerry Whitaker & Harold Winard, pg 34

³ Telecommunications FactBook, Joseph Pecar, Roger O'Connor & David Garbin, 1993, McGraw-Hill, Glossary pg. 344

⁴ Gemini Consulting.Com, Internet

⁵ MCI WorldCom.Com, Internet

⁶ 1998 Annual Review of Communications, Stephen Barreca, pp 529, 532

What's Video?

Transmission	Uncompressed Digital	Compressed Digital
NTSC	100 Mbps	2-10 Mbps
TV-quality video frame	3.3 Mbps	1 Mbps
HDTV	1.2 Gbps	20 Mbps

Source: Understanding Fiber Optics, Sam's Publishing, p. 363

In light of the requirement to transmit video bi-directionally, the term advanced telecommunications capability must be defined as 1.544 Mbps both downstream and upstream. In fact, one could argue that 1.544 mbps just marginally meets the requirement of the Act.

Reasonable and Timely

During our meeting with Commissioner Powell, we discussed the use of technology diffusion analysis to make a determination as to whether advanced telecommunications capability is being deployed on a reasonable and timely basis. To get a well-informed expert opinion, we solicited the views of Dr. Lawrence K. Vanston, President of Technology Futures, Inc. He is a recognized authority on the use of technology forecasting in the telecommunications industry and has over 20 years of experience. Attached is a copy of his resume for your perusal.

We asked Dr. Vanston to give us his personal opinion about the use of technology diffusion curves for accessing the deployment of ADSL and cable modem service. He identifies several serious weaknesses in the use of diffusion curves for the purpose. Here are two of his observations:

“The existing penetration of these [ADSL and cable model] services is less than 1 percent of households. It is often necessary and useful to develop forecasts at this stage in a technology adoption. In fact, TFI often makes such forecasts using diffusion models combined with expert opinion and in other forecasting tools. However, data under 1 percent penetration does not, in itself, provide a strong foundation for forecasting the completion of the substitution. For example, from its introduction in 1954, colored television remained at 1 percent penetration until 1962, and during most of that 8 year period it was difficult to predict the ultimate course of the diffusion (emphasis added).

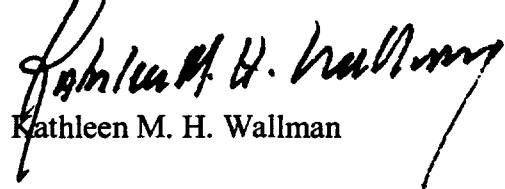
The diffusion curves are not based on an immutable law of physics, but are the summation of human behaviors by individuals and organizations, including

businesses and governments. Most technology adoptions generally follow an S shaped diffusion curve, but the starting time, the rate of adoption, and the departures from the curve are all influenced by the specific actions of people.”

I’ve enclosed a copy of his letter to Timothy Regan, Vice President of Corning, which describes the weaknesses of diffusion analysis in more detail. It appears from this information that the use of diffusion curves to assess whether ADSL and cable modem service are being deployed on a reasonable and timely basis leads to a speculative and arbitrary assessment. In light of this uncertainty, a negative determination under Section 706 appears warranted.

Again, thank you for your time and consideration of our views.

Sincerely,

A handwritten signature in black ink, appearing to read "Kathleen M. H. Wallman". The signature is fluid and cursive, with a long, sweeping underline that extends to the right.

Kathleen M. H. Wallman

Attachment

Copies to:

Magalie Roman Salas
Secretary
Federal Communications Commission

**TECHNOLOGY
FUTURES INC.**

13740 Research Boulevard., Suite C-1, Austin, Texas 78750-1859 • (800) TEK-PLTR • (512) 258-8898
Fax: (512) 258-0087 • Internet: <http://www.tfi.com> • e-mail: info@tfi.com

January 21, 1999

Mr. Timothy J. Regan
Vice President & Director of Government Affairs
Corning, Inc.
1350 I Street, NW
Washington, DC 20005-3305
Fax: (202) 682-3130

Dear Mr. Regan,

This letter is in response to your inquiry about the use of diffusion curves for assessing and forecasting the deployment progress of ADSL and cable modem service. In that regard, I make the following observations, based on our experience at Technology Futures, Inc. (TFI).

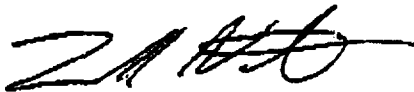
- (1) The existing penetration of these services is less than one percent of households. It is often necessary and useful to develop forecasts at this stage in a technology adoption. In fact, TFI often makes such forecasts using diffusion models combined with expert opinion and other forecasting tools. However, data under 1% penetration does not, in itself, provide a strong foundation for forecasting the completion of the substitution. For example, from its introduction in 1954, color television remained at under 1% penetration until 1962, and during most of that eight-year period, it was difficult to predict the ultimate course of the diffusion.
- (2) The diffusion curves are not based on immutable laws of physics, but are the summation of human behaviors by individuals and organizations, including businesses and governments. Most technology adoptions generally follow an S-shaped diffusion curve, but the starting time, rate of adoption, and departures from the curve are all influenced by the specific actions of people.
- (3) Historically, the progress of a technology or industry can be heavily influenced by government actions or inaction through regulatory and other mechanisms. These influences can have tremendous positive impact, as in the case of the development of the commercial airline industry or the Internet, or tremendous negative impact, as in the case, of the U.S. railroad industry or the traditional American international air carriers. Many believe that regulatory decisions had a direct negative impact on cable industry investment in the mid-1990s that would have provided voice and data competition much earlier than now. For better or worse, government actions do affect the adoption of technology.

Letter to Mr. Timothy J. Regan
January 21, 1999
Page Two

- (4) The ADSL technologies currently being introduced by telephone companies will require significant infrastructure upgrades before they become widely available, especially at the 1.5 Mb/s rate. Further, the infrastructure requirements increase even more when customer requirements exceed 1.5 Mb/s, as I believe they will over the next two decades. We forecast typical requirements to reach 20 Mb/s within 10 years. To provide these rates using xDSL technology, telephone companies will have to make massive investments in distribution fiber.

I hope these observations are responsive to your inquiry. Please let me know if I can provide additional assistance.

Sincerely,

A handwritten signature in black ink, appearing to read 'L. Vanston', with a stylized flourish at the end.

Lawrence Vanston, Ph. D.
President

**LAWRENCE K. VANSTON, Ph.D.****President****Technology Futures, Inc.**

Dr. Lawrence Vanston is an internationally recognized authority in the use of technology forecasting in the telecommunications industry. As president of Technology Futures, Inc., Dr. Vanston has been monitoring, analyzing, and forecasting telecom technologies and services for more than 20 years. His research reports and forecasts are used and referenced extensively by telecom managers and professionals worldwide. As an expert on the impacts of new technologies and markets on the public telephone network, he is frequently called upon to testify before state and federal regulatory commissions.

Since 1985, Dr. Vanston has been the director and principal author of a number of ongoing reports commissioned by the Telecommunications Technology Forecasting Group (TTFG), which is comprised of Bell Atlantic, Bell Canada, BellSouth Telecommunications, Cincinnati Bell, GTE Telephone Operations, Sprint-LTD, and U S WEST Communications. Topics have included Internet access requirements, xDSL technologies, ATM switching, fiber optics, video services, and wireless communications. Most recently, the provocative TTFG report entitled *Wireless vs. Wireline for Voice Services: Forecasts and Impacts* has drawn widespread industry attention.

Dr. Vanston's views and the results of his research are regularly cited by general business and industry publications including the *Wall Street Journal*, *Telephony*, *America's Network*, *Wired*, *Lightwave*, *Wireless Systems Design*, and *Communications News*. The September 21, 1998 issue of *The Wall Street Journal* contained an in-depth interview with Dr. Vanston entitled "Consultant's Call: Lawrence Vanston Makes Some Pretty Bold Predictions for the Future of Telecommunications. He Has Been Right Before."

Dr. Vanston is also a popular speaker on the subject of the future of telecommunications and its significance to organizations and people. He recently served as keynote speaker at the Global Business Forum and has spoken at such prestigious programs as the Pacific Telecommunications Conference, the International Engineering Consortium's ComForum, SUPERCOMM, the Brazil Telecom Summit, and USTA's Capitol Recovery Seminar. Attendees of the 1993 National Telecommunications Forecasting Conference (now International Communications Forecasting Conference) honored Dr. Vanston as Outstanding Speaker of the Year. In addition, he directs the popular ongoing TFI business seminar, *Technology Forecasting for the Telecom Industry*.

Before joining Technology Futures in 1984, Dr. Vanston spent four years with Bell Labs and Bellcore in network planning where he proposed and evaluated potential new long distance, billing, access, and data services. Prior to that, he was with the Texas Petroleum Research Committee and the Center for Energy Studies at the University of Texas at Austin. His academic achievements include a B.A. in government (1975) and an M.S. (1977) and Ph.D. (1979) in operations research and industrial engineering, all from the University of Texas at Austin.

TFI Qualifications

TFI is a management consulting firm specializing in technology management, strategic planning, and technology market forecasting. Since 1978, TFI has provided top companies with a forward-looking vantagepoint for making sustainable business decisions that involve technology. Although TFI works in a variety of industries, it has in-depth expertise in telecommunications and related fields, including wireless communications, data communications, and traditional telephony.

Since 1985, TFI has been prime contractor to the Telecommunications Technology Forecasting Group, comprised of Bell Atlantic, Bell Canada, BellSouth, Cincinnati Bell, GTE, Southwestern Bell, Sprint, and U S WEST. Other TFI clients include Coca-Cola, Corning, IBM, Kodak, Motorola, Raytheon, Telepar (Brazil), Telefonos de Mexico, Arthur Andersen, and PricewaterhouseCoopers. All told, TFI has served over half of the 50 largest companies in the United States and many international clients.

TFI also provides government consulting and research services. For example, TFI recently teamed with Syracuse Research Corporation to provide technology forecasts to the National Security Agency and with Arthur Anderson to provide consulting on collaborative ventures for the Central Intelligence Agency.

In addition to consulting and research, TFI provides top-quality education and publication services to a wide variety of clients. For example, TFI conducts the public seminars *Forecasting, Planning, & Managing Technology* and *Technology Forecasting for the Telecommunications Industry*. Sample publications are *Introduction to Technology Market Forecasting* and *Wireless vs. Wireline for Voice Services*.

Dr. Lawrence Vanston, President of TFI, is an internationally recognized authority on technology forecasting and telecommunications. He is often called on for expert testimony, speaking engagements, and press interviews. *The Wall Street Journal's* in-depth interview with Dr. Vanston entitled "Consultant's Call: Lawrence Vanston Makes Some Pretty Bold Predictions for the Future of Telecommunications. He Has Been Right Before" (September 21, 1998) is a notable example. Dr. Vanston earned his Ph.D. from the University of Texas at Austin in 1979, and then worked in network planning at Bell Laboratories and subsequently Bellcore until joining TFI in 1984.

TFI was founded in 1978 by its Chairman, Dr. John Vanston, an internationally renowned educator, author, and consultant in technology forecasting, technology/market integration, and technology management in uncertain environments. Dr. Vanston directs TFI's popular public seminar *Forecasting, Planning, & Managing Technology* and is author of *Technology Forecasting: An Aid to Effective Technology Management*. He is a graduate of the U.S. Military Academy, Columbia University, and the University of Texas at Austin.

The TFI staff has been actively involved in every aspect of communications and high technology. Each executive or Senior Consultant has 20 or more years experience working in industry for organizations such as BellSouth, GTE, IBM, SEMATECH, and MCC. For example, they helped create the first semiconductor industry roadmap, pioneered the use of technology forecasting in the telecommunications industry, and have served, and continue to serve, as expert witnesses before public utility commissions. TFI clients thus gain the practical experience and personal networks of TFI's experienced staff, combined with TFI's know-how in planning, management, forecasting, and strategy.

Complimenting its expert staff is TFI's extensive toolkit of techniques that addresses market, technology, and stakeholder "care-about's." Using this toolkit, the TFI approach is customized for the client's business issues. This often involves providing a hard-nosed, quantifiable framework based on proven projection methodologies, and overlaying more qualitative techniques as appropriate. Much of TFI's success in forecasting and technology management can be attributed to this combination of experience, expertise, and the matching of proven tools to the client's needs.